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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,820	09/23/2005	Michael Buschle	SONN:077US/10509405	8341

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FULBRIGHT & JAWORSKI L.L.P.
600 CONGRESS AVE.
SUITE 2400
AUSTIN, TX 78701

EXAMINER	
LE, EMILY M	

ART UNIT	PAPER NUMBER
1648	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/550,820	BUSCHLE ET AL.	
	Examiner	Art Unit	
	EMILY LE	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09/23/05+05/15/08*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/17/07+05/11/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II in the reply filed on 05/15/2008 is acknowledged.

Status of Claims

2. Claims 1-28 are cancelled. Claims 29-42 are pending and under examination.

Specification

3. The disclosure is objected to because of the following informalities:

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth below or on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 29-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Millan et al.[1]

The claims are directed to a process comprising the administration of composition comprising an antigen, a type 1 inducing adjuvant, and alum to a subject. Claim 30, which depends on claim 29, requires that the antigen be viral, parasitic, or bacterial. Claim 31, which depends on claim 30, requires the viral antigen to be hepatitis, HIV, HPV or influenza viral antigen. Claim 32, which depends on claim 31, requires that he hepatitis viral antigen be a HAV, HBV, HCV or HDV antigen. Claim 33, which depends on claim 29, requires that the type 1 inducing adjuvant be an immunostimulatory oligodeoxynucleotide (ODN).

Millan et al. teaches the administration of composition comprising an antigen, a type 1 inducing adjuvant, and alum to a subject. [Abstract, in particular.] The type 1 inducing adjuvant of Millan et al. is CpG oligodeoxynucleotide, which is an immunostimulatory oligodeoxynucleotide (ODN). The antigen of Millan et al. is a viral

[1] Millan et al. CpG DNA can induce strong Th1 humoral and cell mediated immune responses against hepatitis B surface antigen in young mice. Proc. Natl. Acad. Sci. USA, December, 1998, Vol. 95, 15553-15558.

antigen. The viral antigen is hepatitis B viral antigen. In the instant case, Millan et al. teaches the claimed invention. Therefore, Millan et al. anticipates the claimed invention.

It should be noted that it logically follows that the administration of a type 1 inducing adjuvant with an antigen would necessarily enhance the antigen-specific type 1 immune response induced by the antigen.

6. Claims 29-32 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Friede et al.[2]

The invention encompassed by claims 29-32 is provided above. Claim 35, which depends on claim 29, requires the type 1 inducing adjuvant to be QS21, a saponin.

Friede et al. teaches the administration of composition comprising an antigen, a type 1 inducing adjuvant, and alum to a subject. [Figure 10, in particular.] The type 1 inducing adjuvant of Friede et al. is QS21, which is a saponin. The antigen of Friede et al. is a viral antigen. The viral antigen is hepatitis B viral antigen. In the instant case, Friede et al. teaches the claimed invention. Therefore, Friede et al. anticipates the claimed invention.

7. Claims 29 and 33-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Schenk, D.[3]

The invention encompassed by claims 29 and 33 is provided above. Claim 34, which depends on claim 29, requires the type 1 inducing adjuvant to be MF59, a lipid particle emulsion.

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[2] Friede et al. U.S. PreGrant Pub. No. 20010053365 A1, published December 20, 2001.
[3] Schenk, D. U.S. Patent No. 6787140 B1, published 09/07/2004, filed 11/28/2000.

Schenk, D. teaches the administration of composition comprising an antigen, a type 1 inducing adjuvant, and alum to a subject. [Table 7, column 37, in particular.] The type 1 inducing adjuvant of Schenk, D. is 5% squalene, which is also known as MF59, which is a lipid particle emulsion. [Lines 6-8, column 16, in particular.] In the instant case, Schenk, D. teaches the claimed invention. Therefore, Schenk, D. anticipates the claimed invention.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 29, 36-38 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Millan et al., as applied to claim 29, in view of Schmidt et al.[4]

The significance of claim 29 is discussed above. Claim 36, which depends on claim 29, requires that the type 1 inducing adjuvant be an immunostimulatory ODN comprising deoxyinosine or an ODN based on inosine and cytidine. Claim 37, which depends on claim 36, requires the adjuvant be a deoxyinosine-deoxycytosine 26 mer. Claim 38, which depends on claim 29, requires that the type 1 inducing adjuvant be a polycationic polymer selected from the group consisting of a peptide containing at least 3 KLK motifs separated by a linker of 3 to 7 hydrophobic amino acids, a polycationic

[4] Schmidt et al. WO 01/93905 A1, published December 13, 2001.

peptide, polylysine and an antimicrobial peptide. Claim 40, which depends on claim 38, limits the adjuvant to polyarginine.

The significance of Millan et al., as applied to claim 29 is also discussed above.

As discussed above, the type 1 inducing adjuvant of Millan et al. is a CpG oligodeoxynucleotide, which is an immunostimulatory oligodeoxynucleotide (ODN). In the instant case, the type 1 inducing adjuvant of Millan et al. is not immunostimulatory ODN comprising deoxyinosine or an ODN based on inosine and cytidine. However, Schmidt et al. teaches that immunostimulatory ODNs comprising deoxyinosine show an immunostimulatory effect comparable or in many instances even better than CpG oligodeoxynucleotide. Specifically, Schmidt et al. discloses that the immunostimulatory ODNs comprising deoxyinosine disclosed therein produce more specific immune responses to a given antigen or antigen fragment than CpG oligodeoxynucleotide. [1st paragraph, page 6, in particular.] Of the immunostimulatory ODNs comprising deoxyinosine that Schmidt et al. teaches, Schmidt et al. also teaches an immunostimulatory ODNs comprising deoxyinosine-deoxycytosine 26 mer. [Example 6, in particular.]

Thus, at the time the invention was made, it would have been prima facie obvious for one of ordinary skill in the art to use an immunostimulatory ODNs comprising deoxyinosine-deoxycytosine 26 mer as an alternative to CpG oligodeoxynucleotide as a type 1 inducing adjuvant. At the time the invention was made, one of ordinary skill in the art would have been motivated to do so to produce specific immune responses to a given antigen or antigen fragment. One of ordinary skill

in the art, at the time the invention was made would have had a reasonable expectation of success for doing so because both deoxyinosine-deoxycytosine 26 mer and CpG oligodeoxynucleotide are type 1 inducing adjuvant, and the substitutions of known alternatives, such as one type 1 inducing adjuvant for another is routinely practiced in the art.

Additionally, Schmidt et al. also teaches that the combined application of deoxyinosine-deoxycytosine 26 mer and polyarginine enhances the antigen specific humoral immune response. Thus, at the time the invention was made, it would have been prima facie obvious for one of ordinary skill in the art to include polyarginine with deoxyinosine-deoxycytosine 26 mer. One of ordinary skill in the art, at the time the invention was made would have been motivated to do so to enhance the immune response induced by an antigen. One of ordinary skill in the art, at the time the invention was made would have had a reasonable expectation of success for doing so because Schmidt et al. has demonstrated that polyarginine enhances the immune response in combination with deoxyinosine-deoxycytosine 26 mer, type 1 inducing adjuvant.

10. Claims 29-31, 33, 38 and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz et al.[5]

The invention encompassed by claims 29-31 and 33 is discussed above. Claim 38, which depends on claim 29, requires that the type 1 inducing adjuvant be a polycationic polymer selected from the group consisting of a peptide containing at least 3 KLK motifs separated by a linker of 3 to 7 hydrophobic amino acids, a polycationic

[5] Fritz et al. WO 02/13857, published 02/21/2002.

peptide, polylysine and an antimicrobial peptide. Claim 41, which depends on claim 38, limits the adjuvant to a cathelicidin-derived antimicrobial peptide. Claim 42, which depends on claim 29, requires the subject to be human.

Fritz et al. teaches the administration of composition comprising an antigen and a type 1 inducing adjuvant to a subject. The antigen that Fritz et al. teaches includes viral, parasitic and bacterial antigens. The type 1 inducing adjuvant Fritz et al. teaches is cathelicidin-derived antimicrobial peptide.

Fritz et al. did not include alum with the composition. However, Fritz et al. does suggest that the composition further comprises an immune response stimulating substances. The immune response stimulating substances that Fritz et al. teaches includes adjuvants. One of the adjuvant that Fritz et al. teaches is alum.

Hence, at the time the invention was made, it would have been prima facie obvious for one of ordinary skill in the art to include alum with the composition of Fritz et al. One of ordinary skill in the art, at the time the invention was made, would have been motivated to do so to enhance the immune response induced by the composition of Fritz et al. One of ordinary skill in the art, at the time the invention was made would have had a reasonable expectation of success for doing so because the use of adjuvants to enhance the immune response induced by an antigen is routinely practiced in the art.

Additionally, it would have been prima facie obvious for one of ordinary skill in the art to administer the composition rendered obvious by Fritz et al. to a human. One of ordinary skill in the art, at the time the invention was made would have been motivated

to do so to induce an immune response in a subject. One of ordinary skill in the art, at the time the invention was made would have had a reasonable expectation of success for doing so because administrations of pharmaceutical compositions to humans are routinely practiced in the art.

11. Claims 29-33, 38-39 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz et al.[6] (Fritz 2) in view of Fritz et al.

The invention encompassed by claims 29-33 and 38 is discussed above. Claim 39, which depends on claim 28, requires the adjuvant to be a synthetic peptide with the sequence KLKLLLLLKLK, SEQ ID NO: 6. Claim 42, which depends on claim 29, requires the subject to be human.

Fritz 2 teaches the administration of composition comprising an antigen and a type 1 inducing adjuvant to a subject. The antigen that Fritz et al. teaches includes viral, parasitic and bacterial antigens, including HBV, HCV, HAV, HIV and influenza antigens. The type 1 inducing adjuvant Fritz 2 teaches is a synthetic peptide with the sequence KLKLLLLLKLK. The peptide of Fritz 2 has the same amino acid sequence as claimed SEQ ID NO: 6.

Fritz 2 did not include alum with the composition. However, Fritz 2 does suggest that the composition further comprises an immune response stimulating substances. The immune response stimulating substances that Fritz 2 teaches includes adjuvants. Fritz 2 et al. does not teach alum as an adjuvant.

[6] Fritz et al. (Fritz 2) WO 02/32451, published April 25, 2002.

However, at the time the invention was made, Fritz et al. teaches the use of alum as an adjuvant, an immune response stimulating substance.

Hence, at the time the invention was made, it would have been prima facie obvious for one of ordinary skill in the art to include alum with the composition of Fritz 2. One of ordinary skill in the art, at the time the invention was made, would have been motivated to do so to enhance the immune response induced by the composition of Fritz 2. One of ordinary skill in the art, at the time the invention was made would have had a reasonable expectation of success for doing so because the use of adjuvants to enhance the immune response induced by an antigen is routinely practiced in the art.

Additionally, it would have been prima facie obvious for one of ordinary skill in the art to administer the composition rendered obvious by Fritz 2 to a human. One of ordinary skill in the art, at the time the invention was made would have been motivated to do so to induce an immune response in a subject. One of ordinary skill in the art, at the time the invention was made would have had a reasonable expectation of success for doing so because administrations of pharmaceutical compositions to humans are routinely practiced in the art.

Conclusion

12. No claims are allowed.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Le whose telephone number is (571)272-0903. The examiner can normally be reached on Monday - Friday, 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce R. Campell can be reached on (571) 272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Emily Le/
Primary Examiner, Art Unit 1648

/E. L./